



**Institute of Industrial Engineers
Chapter 47
NEWSLETTER
Greater Detroit Area
Michigan**

Mission:
The Mission of the Detroit Chapter is to promote the advancement of Industrial Engineering by providing professional development information and resources to our customers.


Volume 48, No. 2

Apr-Jun, 2004

Visit us on the web [http:// www.iiedetroit.org](http://www.iiedetroit.org)

2004 Officers

- Regoin VP**
Vito Wasniewski, SBC
(248) 524-7319
- President**
Dr. Jayant Trewn,
William Beaumont Hospitals
(248) 423-2419
- Executive V.P. & Development**
Dr. Bijay Nayak, AAM
(313) 758-4167
- Program Co-V.P.'s**
Bob Fitzgerald, General Motors
(586) 986-1327
- Newsletter Editor V.P.**
Ron Brzuch, Ford
(313) 322-9874
- Advertising V.P.**
Greg Andrysiak, TRW Inc.
(734) 266-2590
- Community Service V.P.**
Victor Lloyd, Beaumont Hosp
(248) 423-2403
- Webmaster V.P. & E-mail V.P.**
Patrick Hillberg
(248) 797-1804
- Membership V.P.**
Vinod Chauhan, Visteon
(586) 466-9598
- Finance V.P.**
Vito Wasniewski, SBC
(248) 524-7319
- Administration V.P.**
Vidyasagar Murty, PMC
(313) 441-4460, x1119
- Affiliate Council V.P.**
Khaled Mabrouk, Mabrouk
Modeling Solutions, LLC
(734) 998-5560
- Public Relations V.P.**
Ron Brzuch, Ford
(313) 322-9874
- University Liaison V.P.**
Darin Ellis
(313) 875-3412
- Past President**
Tej Jhamb, T.J. Associates
(248) 649-4081
- Student Chapter Advisors**
University of Michigan - Ann Arbor
Dr. Amy Cohn - (734) 615-7258
University of Michigan - Dearborn
Munna Kacchal - (313) 593-5053
Wayne State University
Leslie Montplaisir - (313) 875-3412
Darin Ellis—(313) 875-3412
- WSU Student Chapter President
Gary Altman




Tuesday, April 13, 2004

**Making Manufacturing Visible
to Top Management**

Article on page 3. Map on page 8.

April APICS / IIE Joint Meeting



Time: 5:30 PM Social, 6:30 PM Dinner, 7:30 PM Presentation
Cost: \$35 Member, \$40 Guests, \$25 Students,
 \$5 Meeting only, payable by credit card at time of registration
Location: The Best Western Laurel Park Suites, Livonia, MI,
 located on the southwest side of Six Mile and I-275
Register with IIE at 313-438-0205, or
Register with APICS at 248-443-9630

Thursday, May 20, 2004

American Axle Plant Tour/Presentation

Reservations are limited. Article on page 4. Map on page 8.



Time: 3:30 PM Presentation, Tour From 4:00 PM to 5:00 PM
Location: American Axle Manufacturing - Detroit Plant. Directions on page 4.
To sign up: Please e-mail Bob Fitzgerald at robert.s.fitzgerald@gm.com
 and give your place of employment.

Wednesday, June 16, 2004

Ford Rouge Factory Tour

Reservations are limited. Article and directions on page 4.



Time Notice: Arrival MUST be prior to 12:30 PM for the 1:00 PM tour.
Cost: \$14. There will be NO refunds or exchanges for later tours.
Location: Meet at The Henry Ford, 20900 Oakwood Blvd., Dearborn, MI
To sign up: Leave your telephone number at IIE VOICEMAIL (313) 438-0205.
 You will be contacted for MC/Visa information. NO refunds or exchanges.

TABLE OF CONTENTS

<i>Chapter President's Message</i>2	<i>Membership Report</i>5
<i>Chapter Activity Report</i>2	<i>Membership Activities</i>5-6
<i>Upcoming Meetings</i>2	<i>Career Development</i>7
APICS Joint Meeting 3	<i>Advertising and IIE Positions</i>7
AAM Plant Tour4	<i>Maps for Meetings</i>8
Ford Rouge Plant Tour4	

Chapter President's Message

by Jayant Trewn



Greetings to all members:
Last week I muddled through a bunch of old IIE Chapter 47 newsletters and noticed that there is a lack of features, articles and news-items submitted by chapter members for publication in our chapter newsletter. I take this opportunity to invite members to submit newsletter items for publication in the next two newsletters scheduled for release in July and October 2004. This is your newsletter. Lets start acknowledging accomplishments and share our experiences as Industrial Engineers. Please e-mail such items to Ron Brzuch, Newsletter Editor & VP at rbrzuch@comcast.net.

On the same note, I would like to invite our membership to get involved in the planning, organizing and execution of this year's Fall Symposium. Last year, we held our first Fall Symposium at Beaumont Hospital. We featured speakers and presentations in the Manufacturing and Healthcare sectors with a focus on Six Sigma awareness. The success of last year's event attended by 186 participants has encouraged the chapter Board to repeat this one-day event as a recurring annual symposium. This year we have started the planning process and are leaning towards a focus on Lean Techniques as applied in Six Sigma Performance Improvement methodology. If you would like to get involved in this years event, please do e-mail me at president@iiedetroit.org. Please mention if you would like to volunteer your time in planning and organizing the event or alternatively, send me your suggestions for making this event a memorable and valuable experience for our membership.

Have a great Spring.

Jayant Trewn

Chapter Activity Report

by Bijay Nayak

2004 started with big plans and minor systemic changes in the chapter. The year-to-date 2004 snapshots are :

1. Held 3 E-Board Meetings.
2. Organized Best Technical Award Presentation for the Student Chapters. **Margie Krakauer** was awarded \$100 for the best technical paper (Jan. 2004).
3. Organized IIE & SAVE Joint Chapter Meeting on Lean Manufacturing. **Ron Crabtree**, Management Consultant was the presenter (March 2004).
4. Published 1 Newsletter full of exciting programs and chapter news (Jan. 2004).
5. Kicked off planning & organizing sessions for Lean Six Sigma Symposium 2004 scheduled for October 2004.
6. **Greg Andrysiak** was awarded Distinguished Service Award, **Patrick Wilson** received the Irv Otis Scholarship, and **Tej Jhamb** and **Khaled Mabrouk** accepted the Partner of the Year Award for the IIE Detroit Chapter at the ESD Gold Award Banquet (Feb. 2004).
7. **Dr. Jayant Trewn** presented a paper on "A Treatise on Process Variation that affects Patient Flow in Hospitals" at Society for Health Systems Conference, Florida (Feb. 2004).
8. Chapter Officers participated in the "ESD Revitalization of the Riverfront Project" meeting.
9. **Dr. Jayant Trewn** published a book on "Multivariate Statistical Methods in Quality Management", published by McGraw Hill Professional (Feb. 2004).
10. The 2004 YTD Score (estimated) = 31. As agreed and promised by all of us, we will be shooting for at least 80 points for the Gold Award.
11. In order to improve the Score further, we need to focus rigorously on the Chapter Programs, Membership Communications, Growth & Retention, Student Outreach and Community Affairs, and Membership & Institute Support activities.

If you have any news items related to member promotions, activities, awards, publications, or projects, training or workshops conducted, please forward it to **Dr. Bijay Nayak**, Executive VP & Chapter Development at Phone: 313-882-7442, Fax: 313-882-7443, E-mail: bnayak@msn.com to include in the Chapter Activity Report.

Up Coming Events in 2004

April 16th	Joint IIE/APICS Meeting
May	Lean Mfg - Jayne Harris, GM
June	Ford Rouge Tour, Dearborn
July	Golf Outing, Sylvan Glen, Troy
August	Harbour Report - Ron Harbour
September	Student Night, UM-AA
October	Productivity Symposium
November	Joint IIE/SWE Meeting
December	Holiday Dinner and Inauguration

Making Manufacturing Visible to Top Management

Tuesday, April 13, 2004



April APICS/IIE Joint Meeting

Date: Tuesday, April 13, 2004
Time: 5:30 Social, 6:30 Dinner, 7:30 Presentation
Cost: \$35 Member, \$40 Guests, \$25 Students,
\$5 Meeting only, payable by credit card at
time of registration
Location: The Best Western Laurel Park Suites,
Livonia, MI, located on the southwest side of
Six Mile and I-275
Register with IIE at 313-438-0205, or
Register with APICS at 248-443-9630

It seems to be manufacturing's curse to live in a world where it consistently delivers improvements in the form of reduced waste, improved lead times, reduced costs, and improved quality yet top management fails to recognize or appreciate these contributions. In the past, manufacturing and professional organizations such as APICS have tried to address this curse by trying to educate top management about processes, manufacturing, inventory and lead time. It is time for us to recognize a simple fact: this approach for the most part has failed. It has failed because: (1) top management is not and will not be interested in processes or lead time; (2) we have demanded top management speak manufacturing's language; and, (3) we have not translated operational improvements into financial results – the language spoken by top management.

In this presentation, we discuss the tools, perspective, and frameworks necessary to make manufacturing visible to top management. We begin with a critical framework – the 360 leadership framework. This framework recognizes that manufacturing must secure the involvement of four critical groups – subordinates, suppliers, customers, and superiors. Each group views the manufacturing task differently: each speaks a “different” language; and, each expects the other groups to speak their language. Next, we focus on metrics – the language of top management. Finally, we introduce the participants to the Strategic Profit Model – a method by which we can show how manufacturing improvements financially affect the firm's top line (sales) and bottom line (costs and profit). Together, these tools help make manufacturing visible to top management and it helps show top management that manufacturing has a significant positive strategic and financial impact on the firm.

About the Presenter

Steven A. Melnyk:



Steven A. Melnyk, CPIM, is Professor of Operations and Supply Chain Management at Michigan State University. He is the lead author of 14 books, including *Shop Floor Control* (Dow Jones-Irwin, 1985), *Production Activity Control: A Practical Guide* (Dow Jones-Irwin, 1987), *Shop Floor Control: Principles, Practices and Case Studies* (APICS, 1987), *Computer Integrated Manufacturing: A Source Book* (APICS, 1990), *Computer Integrated Manufacturing: Guidelines and Applications from Industrial Leaders* (Business One, 1992), *Operations Management: A Value Driven Perspective* (McGraw-Hill, 1996), *Back to Basics: Your Guide to Manufacturing Excellence* (CRC Press, 2000), and *Value-Driven Operations Management: An Integrated Modular Approach* (McGraw-Hill, 2002). His research interests include supply chain management and design, metrics/system measurement, Time-Based Competition (TBC), variance management, and Environmentally Responsible Manufacturing (ERM). Dr. Steven A. Melnyk is an active researcher whose articles have appeared in such international and national journals as the *International Journal of Production Research*, the *International Journal of Operations and Production Research*, the *Journal of Operations Management*, the *International Journal of Purchasing and Materials Management*, *Journal of Supply Chain Management*, *IEEE Transactions in Engineering*, *European Journal of Operations Research*, and *Production and Inventory Management*. Dr. Melnyk sits on the editorial review board for *Production and Inventory Management* and the *International Journal of Production Research*. He is also the lead author on the monthly “Back to Basics” column found in *APICS: The Performance Advantage*. Dr. Melnyk is known for his ability to bridge the gap between the academic and practitioner worlds.

Dr. Melnyk is a member of the Mid-Michigan Chapter of APICS and a past Director of Publicity for Region XIV of APICS. He is also a member of the Central Michigan Chapter of NAPM. In 2002, Dr. Melnyk was appointed to the Board of Directors for the Education and Research Foundation of APICS. Dr. Melnyk has spoken to various APICS and NAPM/ISM groups at the international, national and regional levels. He is also a member of the Production and Operations Management Society, the Decision Sciences Institute, and the Society for Manufacturing Engineers. He has consulted with over 60 companies. Dr. Melnyk's contributions to the theory and practice of production and inventory management were recognized in 1992 by the Grand Rapids Chapter of APICS when they awarded him the Paul Berkobile Award. In addition, in 1999, Dr. Melnyk was recognized as a **Faculty Pioneer** by ASPEN Institute for his leading edge work on integrating environmental concerns into business practice.



American Axle Plant Tour and Presentation Thursday, May 20, 2004

American Axle Tour & Presentation

Date: May 20, 2004 (Thursday)

Time: 3:30PM to 4:00PM Presentation,
4:00PM to 5:00PM Plant Tour

Location: Detroit Gear & Axle
American Axle & Manufacturing Inc.
1840 Holbrook Avenue
Detroit, Michigan 48212

Maximum Number of Attendees: 30

Agenda

Introduction: 5 Min.

Company Overview / Plant Overview: 20 Min.

Discussion of Lean Concepts Implemented will be included in the overview & tour.

Walking Tour of Plants 2-1-8: 45-60 Min.

Debrief Meeting: 10 Min.



American Axle Driveline/Chassis Division

With facilities that were established at the turn of the century and recently upgraded and modernized, Detroit Gear & Axle is our largest plant. The state-of-the-art front and rear axles produced there are of the highest quality. Situated on the same grounds as our World Headquarters in Detroit, the Detroit Gear & Axle plant, AAM's flagship manufacturing operation, is a leader in the automotive supply industry.

AAM's full line of four-wheel-drive and all-wheel-drive front axles are the product of world-class engineering and unsurpassed manufacturing capability with over a century of AAM's industry leadership.

Products & Technologies seen in Plants 1, 2 & 8: All plants on this complex make drive axles for light trucks and SUV's. Plant 1 makes all front and rear gearsets. Machining & Heat Treating processes. Lean Model Cells, Plant 2 makes rear drive axles for all vehicles, Machining & Assembly processes. Mass Production & Automation. Plant 8 makes front drive axles for 4WD and AWD vehicles. Machining & Assembly Processes. Mix of Mass & Lean.

Details on Speakers & What will be presented: Clark A. Harrison, Manager, Business Planning & Lean Manufacturing Craig Bowman, Sr. Site Manager, Lean Manufacturing. Presentations will include two main themes; general overview of plant and transition to lean.

Time: Arrive in time to meet in lobby a little prior to 3:30PM on 5/20/04 (Tour/Program Starts at 3:30PM)

Parking Instructions: Very easy to find - just northeast of the intersection of I-94 and I-75 - From either North or South I-75, take Holbrook/Caniff exit and turn East on Holbrook. Just before railroad tracks on right side will be a parking lot with a security station. Park and walk across tracks to the main lobby entrance on the right (south) side of the street. Check in with receptionist and identify as member of IIE.

Ford Rouge Factory Tour Wednesday, June 16, 2004



Witness the celebration of the innovation of manufacturing in America - where history and the future merge. Experience this spectacular new attraction at The Henry Ford.

GO inside one of the world's largest automotive complexes.
EXPERIENCE a virtual reality theater adventure.
SEE the world's largest living roof.
WITNESS the new factory where the Ford F-150 will be made.

Reservations are limited.

The Henry Ford is located in Dearborn, Michigan on the corner of Village Road and Oakwood Boulevard, just west of the Southfield Freeway (M-39) and south of Michigan Avenue (US-12). A shuttle bus will take you to and from the Ford Rouge Plant.

Membership Report

Total Members = 255, as of 3/2/2004

NEW MEMBERS Ziaee, Reza
 Senchuk, Adam M.

TRANSFERS INTO THIS CHAPTER
 Graunstadt, Patricia M.

Membership Activities

GOLD AWARD—CHAPTER RECOGNITION

by Bijay Nayak

The Detroit Chapter received a note from IIE National:

“Detroit Chapter has received the Gold Award for the 2003 Chapter Recognition Program. The activity your chapter shows proves to be beneficial for its success.

Your chapter will be honored with a crystal globe at the Honors & Awards Dinner in Houston, Texas on Monday, May 17th. More detailed information and RSVP is forthcoming.

If you have further questions please feel free to contact me. Thank you once again for all the hard work and all the best to your chapter activities for the year 2004.”

Detroit Chapter President **Jayant Trewn** and Region VP **Vito Wasniewski** will be in Houston and will accept the award on behalf of the Greater Detroit Chapter.

WSU STUDENT VOLUNTEERS

by Gary Altman and David Cottrill

The Wayne State University student chapter of IIE volunteered at Gleaner's Food Bank in Detroit Michigan twice this school year; first on Oct 18 then again on Feb 28. Both times IIE was represented well by WSU IE students. Students were able to help by packaging food and making it ready for delivery to those in need. For more information on Gleaner's and their contribution to the community please visit www.gcfb.org.



DEFENDED DOCTORAL DISSERTATION

Congratulations to **Pat Hillberg**, our VP of Website & E-mail, for successfully defended his doctoral dissertation in Systems Engineering at Oakland University. His topic covers simulation modeling, data-mining, and automated data collection.

DISSERTATION ABSTRACT IMPROVING MANUFACTURING PRODUCTIVITY THROUGH OPPORTUNISTIC PREVENTIVE MAINTENANCE VIA SIMULATION AND ANALYTICAL MODELING

The Theory of Constraints states that productivity is lost when constraint resources are Blocked, Starved, or Faulted, and that such situations arise due to variability within the manufacturing system. In a largely automated system, the predominant source of variability is due to machine down time, and the Theory of Constraints calls for preventive maintenance to reduce the occurrence of machine faults. However, it does not identify when this preventive maintenance should occur. This most obviously becomes a problem when the manufacturing system is expected to run every hour of every day.

This dissertation presents an approach towards opportunistic preventive maintenance, in which gaps in part flow are identified and maintenance is performed within these gaps. To accomplish this, a means is described in which manufacturing system data is automatically collected and provided to a discrete event simulation model, and data from the model is used to develop predictive tools. Three predictive methods are compared; statistical regression, neural networks, and case-based reasoning. In the final chapter, throughput improvements are found through implementation of the predictive tools.

BOOK PUBLISHED

Kai Yang and **Jayant Trewn** have jointly written a book published by McGraw-Hill Professional. It is titled:

Multivariate Statistical Methods in Quality Management

Author(s): Kai Yang, Jayant Trewn

ISBN: 0071432086

Format: Hardcover, 50 illus., 299 pages.

Pub date: February 25, 2004

There's no better way to master the most rigorous statistical methods available for analyzing the performance of complex systems --Multivariate Statistical Methods in Quality Management teaches powerful analytic tools for troubleshooting, root cause analysis, process control, quality improvement, and many other applications. Written by statistics experts who specialize in reliability and quality engineering, this unique resource introduces the fundamentals and then demonstrates how to:

- Make complex data intelligible with graphical tools
- Choose the best method for each data set
- Make complex data intelligible with graphical tools
- Coax important hidden information from data with graphical 3-D software and numerical multivariate data stratification
- Perform data reduction with principal component analysis, factor analysis, and discriminant analysis
- Apply multivariate methods in Six Sigma enterprises
- Get clarification from case studies, models, 50 illustrations
- Uncover the source of problems and pinpoint solutions in arenas from manufacturing processes to sales performance and beyond

Membership Activities (Continued)

2006 IIE CONVENTION IN DETROIT?

by Vito Wasniewski

Your Chapter board was busy making a great visit for Greg Hart (IIE National VP Education) to assist him in making a recommendation to the IIE National Board for the 2006 Convention, hopefully in Detroit.

Many thanks to Cheryl Ollila from the Detroit Convention Bureau for setting up hotel facility tours at RenCen Marriott and the Dearborn Hyatt Regency, and support from Conrad Schwartz of GM for the excellent overview of accomplishments and plans for the redevelopment of the Detroit RenCen and riverfront.

The local board attendees included Vito Wasniewski, Jayant Trewn, Bob Fitzgerald, Ron Brzuch and Frank Plonka.

NATIONAL ENGINEERS WEEK

by Ron Brzuch

The IIE Detroit Chapter joined the Engineering Society (ESD) to celebrate National Engineers Week at the annual *Gold Award Banquet*, honoring the engineering profession on February 23, 2004. This gala evening provides a forum for the *Affiliate Council of the Engineering Society of Detroit* and the *Affiliate Societies* to honor and congratulate members who have distinguished themselves through outstanding achievement and service within their respective societies.

The Detroit Chapter IIE received three awards at the ceremony, the Partner of the Year Award, Distinguished Service Award and the Irv Otis Scholarship.

IRV OTIS SCHOLARSHIP



IIE Chapter President, **Jayant Trewn**, congratulates **Patrick Wilson** with the Irv Otis Scholarship Award and \$500 check.

PARTNER OF THE YEAR AWARD



On behalf of the Detroit Chapter IIE, **Khaled Mabrouk** (on left), the Affiliate Council VP, and **Tej Jhamb**, the Past President, receive the Partner of the Year Award from the Engineering Society (ESD).

The Affiliate Societies Council of ESD established an awards program to honor member societies that supports:

- Cross-Society cooperation and communication,
- Engineer's Week peer recognition through the Annual Gold Award program,
- Enhancement/knowledge of Engineering and the Sciences through involvement of Affiliate Society members in education programs and promotion,
- Partnership with other Affiliate Society members in coordination of programs, events, and projects,
- Promotion of the Engineering & Scientific fields to the next generation of professional through programs working with children in our local community.

DISTINGUISHED SERVICE AWARD



IIE Chapter President, **Jayant Trewn** (left), congratulates **Greg Andrysiak**, Distinguished Service Award winner.

S
A
V
E
S
A
E
S
E
I
S
E
A
S
S
F
P
E
S
M
E
S
P
E
S
T
L
E
S
W
E

A
W
W
A
A
W
S
S
A
S
M
M
A
I
S
E
C
S
I
D
S
C
T
E
S
E
S
M
M



You Paid Your Dues...
Now Enjoy the Benefits! All Member Societies of the ESD Affiliate Council Offer These Terrific Insurance Programs!

Auto and Homeowners Insurance
 For ESD Members and ESD Affiliate Societies
Underwritten by Citizens Insurance Company

- 18% ESD Group Discount for Auto Insurance*
- 18% ESD Group Discount for Homeowners Insurance*
- Over 14,000 policies are now insured in this program

* These discounted rates are available July 1, 2002 through June 30, 2003

Health Insurance and Prescription Drugs
 For Members
Underwritten by Blue Cross/Blue Shield of Michigan

- Attractive menu of medical and dental plans
- Available for groups of 2 to 99 employees
- No pre-existing condition clauses or medical underwriting for groups of 2 or more.

Dental Insurance
 For Individual Members
Underwritten by Michigan Dental Plans

- No waiting periods
- Multiple options from which to choose
- \$1,000 calendar year maximum

Workers' Compensation Insurance
Underwritten by Citizens Insurance Company

- Available to members who own *engineering or architectural firms*
- Average workers' compensation dividend history over the past five years is 41.7%

Business Owner's Policy
Underwritten by Citizens Insurance Company

- Features Expanded Property Coverage and Customized Endorsements
- Features Liability Limits of \$2,000,000 to \$4,000,000

Classic/Antique Car Insurance
Underwritten by Hagerty Classic Insurance

- Agreed Value Coverage (full value paid upon a total loss)
- Only one liability charge per policy, not per vehicle

Call Hartland Insurance Group for further information on any of these excellent ESD Affiliate Council-Endorsed Insurance Programs.

(800) 682-6881
www.hartlandinsurancegroup.com

Career Development

If any Chapter member would like to post a job opening or situation wanted, please contact: Greg Andrysiak at (248) 442-8607, greg.andrysiak@trw.com. Please see our website at iiedetroit.org for the latest job openings or situations wanted.

Situation Wanted

If you are looking for BSIEs and MSIEs with various years of experience, see iiedetroit.org for current resumes.

Looking for top-notch employees?

Begin your search at IIE's new online Career Center, which offers all the features you need to find qualified employees. No matter what your staffing needs or budget, we have a recruitment tool for you.

Contact IIE Sales Department to purchase unlimited postings and resume searches for a year. Call Jack Eller at 770-349-1109, or Tom Miller at 770-449-0461 ext.127.

Are you looking for an outstanding job? We have your needs covered, too. Go to www.iienet.org/careercenter and see all the services IIE's new Career Center has to offer you!

Help Wanted

Executive healthcare recruiter seeks candidates with degree in Industrial Engineering and have 5-7 years experience in business process simulation and design. The positions require relocation to Dallas or San Francisco. Contact Hollie Krantz, at 214-691-2000 x101. www.mednex.com



May 15 - 19, 2004
Hilton - Americas | Houston, Texas

IIE is a member-led organization. Members may be elected, appointed, or may volunteer for the various boards, councils, committees, task forces, and advisory boards that are responsible for providing leadership throughout the organization.

We are currently looking for assistance and committee chairpersons to officer positions in Programs, Newsletter, Website, and Membership.

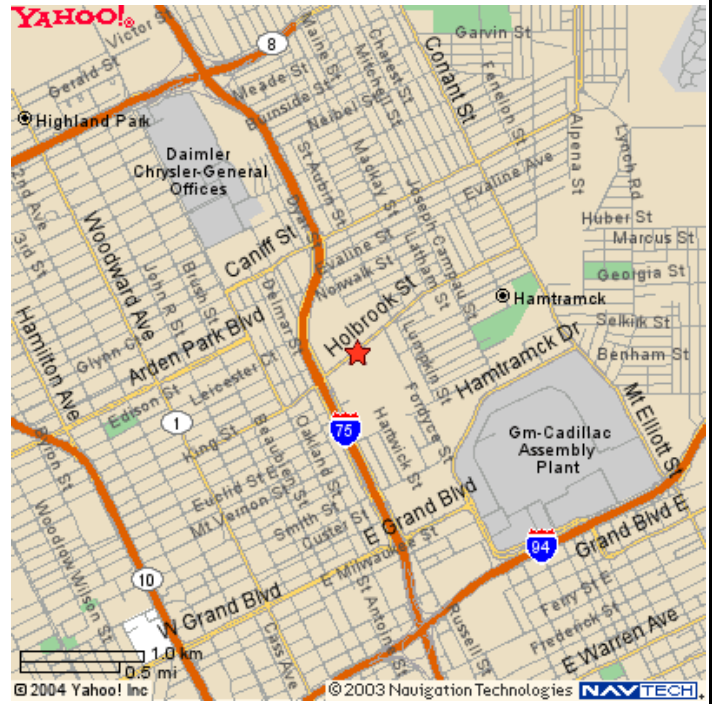
Contact Dr. Jayant Trewn, president@iiedetroit.org.

Tuesday, April 13, 2004
**Making Manufacturing Visible
to Top Management**



Best Western Laurel Park Suites
16999 South Laurel Park Drive, Livonia, MI 48154

Thursday, May 20, 2004
**American Axle Plant Tour
and Presentation**



Detroit Gear & Axle, American Axle & Manufacturing Inc.
1840 Holbrook Avenue, Detroit, Michigan 48212

Institute of Industrial Engineers #47
c/o Ron Brzuch
7247 Almaden Court
Canton, MI 48187

DATED MATERIAL